Hw1 - Implementing Discrete Hidden Markov Model

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I. Implementation

Code in /src/test.c and /src/train.c were following the instruction in dsp_hw1.pdf, and there is nothing other than multiple layers of for loop as expected.

II. Test Result

1. Trained model: The sum of initial probability and every column in observation probability are all 1, which is reasonable. However, the sum of column in transition are not always 1, mainly after large # of iteration, which is quite awkward.

2. I wrote some additional cpp, bash and python code* to create the plot of accuracy-# of iteration, which came out similar to the plot in dsp_hw1.pdf:

initial

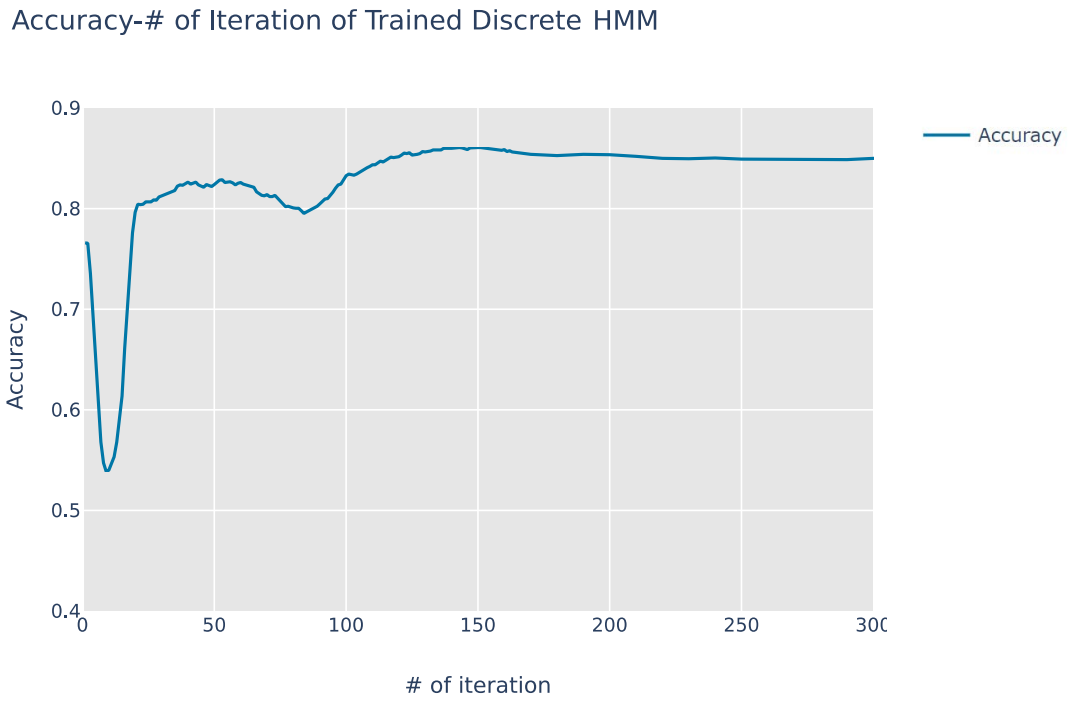
1.00	0.00	0.00	0.00	0.00	0.00	1.00

transition

0.62	0.17	0.09	0.12	0.00	0.00	1.00
0.00	0.60	0.23	0.17	0.00	0.00	1.00
0.00	0.00	0.25	0.70	0.02	0.02	1.00
0.00	0.00	0.23	0.26	0.39	0.13	1.00
0.00	0.50	0.00	0.00	0.14	0.37	1.00
0.00	0.50	0.00	0.00	0.07	0.43	1.00
0.62	1.77	0.80	1.25	0.61	0.95	

observation

0.43	0.10	0.01	0.11	0.00	0.00
0.36	0.10	0.00	0.11	0.00	0.00
0.18	0.80	0.48	0.29	0.00	0.00
0.03	0.00	0.50	0.39	0.00	0.00
0.00	0.00	0.00	0.11	0.00	0.00
0.00	0.00	0.00	0.00	1.00	1.00
1.00	1.00	1.00	1.00	1.00	1.00



* See https://github.com/ChexterWang/dsp.git